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### Pavia memoirs

The tenth volume of the *Atti* of the botanical institute of the University of Pavia[2] precedes in publication the ninth, because the plates of an incomplete research are already printed and numbered for the ninth volume. Volume X, containing work dating from 1904 to 1907, opens with a portrait of FEDERICO DELPINO, a bibliography, and a brief dedication of the volume to him by his friend, the director, Dr. GIOVANNI BRIOSI.

There are several papers on plant diseases. First is an elaborate and well-illustrated account by BRIOSI and FARNETI of the white rust of the lemon, a serious disease in Sicily, due to some of the developmental forms of *Rhynchodiplodia Citri*, such as *Pseudofumago Citri*, *Cladosporium Citri*, *Hormodendron Citri*, etc. TURCONI describes a new fungus from Mexico, *Phyllachora mexicana*, parasitic on *Adolphia infesta* Meissn., the *chaquirilla*. FARNETI and POLLACCI describe a new mode of dispersal of phylloxera by hibernating larvae, inclosed in galls of peculiar form. FARNETI has a paper on a disease of rice, known in Italy as *brusone* and by a great variety of other names, which he ascribes to a single rather polymorphic fungus, *Piricularia Oryzae* Briosi & Cavara. It occurs also in Japan. It is transmitted by infected seeds and straw, and spores are distributed by wind and water. The parasite infests Panicum and Leersia also. BRIOSI details his rather hurried observations on the government nurseries of vines in Sicily, in which the disease *roncet* has appeared among the American stock destined to replace the vines destroyed by phylloxera. The disease is not threatening, but he recommends precautions. Besides these there are various short notes on fungus diseases.

There are several microchemical papers; one by CAZZANI is a critique of GORIS' work on esculin; another by POLLACCI suggests a better mode of testing for phosphorus in plant tissues. POLLACCI also reviews the history of the discovery of formaldehyde in plants and files his *caveat* as first discoverer in July 1899.

In physiology there are three papers. One is a short note by MONTEMARTINI, bringing evidence against JOST'S theory that the development of the leaf traces is due to stimulus from the growing organ above. A paper by the same author gives a résumé of the previous work upon the formation of proteids and reports the first results he obtained in a study of the effects of light on the process, which indicate that it is favorable thereto. POLLACCI, confirming his earlier conclusions, reports that plants emit hydrogen in light; but he also finds that they give it off in darkness, and that certainly cannot be related to photosynthesis. Nevertheless he maintains the reduction of $H_2CO_3$ by $H_2$ into $HCOH+HOH+O$.

The morphological papers include two brief notes by MONTEMARTINI, one on the origin of anomalous pitchers from the leaves of *Saxifraga crassifolia;* the other on a biological adaptation of the leaves of *Buxus sempervirens*, wherein he finds a mass of ice formed on freezing days between the lower epidermis and the mesophyll, which, he says, protects the leaf from further harm by cold and serves by retaining the water (ceded later to the stems) to facilitate the development of buds in spring!

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[2] Atti dell' Istituto Botanico dell' Università di Pavia. Redatti da GIOVANNI BRIOSI. II Serie, Volume X. Imp. 8vo. pp. xxiv+361. *1 portrait. pls. 28* (20 colored). Milano: Tipo-Lit. Rebeschini di Turati E. C. 1907.

The most voluminous morphological paper is one by BUSCALIONI and TRAVERSO on the morphological evolution of the flower in relation to the chromatic evolution of the perianth. They seek to show that the evolution of floral coloration is neither due merely to insect relations nor is it monophyletic. At least two lines are recognized, one characterized by the dominance of the xanthic series, the other by the cyanic. "Internal causes" primarily, then insect visits and "other factors," have been the agents in modifying the first flowers, which they assume to have been anemophilous—an assumption that needs defense. Of course "inherent causes" is simply a confession of defeat. HENSLOW'S theory (1893) came to their attention only after part of the work was printed; his book on *The origin of floral structures* is critically discussed in an appendix, and his theory mildly approved.

The volume closes with official reports of the work of the Royal Cryptogamic Laboratory of the Institute in 1904 and 1905. They show that it is doing good service for the country and the various researches indicate the activity and energy of the staff.—C. R. B.

## Progress of botany

In the second part of the first volume of this admirable series, CZAPEK gives a résumé of the progress of our knowledge of the nutrition of plants since the publication of the first volume of PFEFFER'S *Physiologie*.[3] By his interpretation *Ernährungsphysiologie* covers even more than our blanket-word metabolism; for he discusses the mechanics of all the exchanges of material between the plant and the outer world, and the movement of water and foods within it, as well as the synthesis of foods, their assimilation, the non-plastic products, the ash constituents, enzymes and cytotoxins, respiration, and fermentation.

To do this within 114 pages would not be possible, were it not that the author can refer in many places to the summary already prepared in his *Biochemie der Pflanzen*. It must be remembered that a reporter sees things from a particular angle, and while we cannot always approve the point of view occupied by this author in surveying the field of research, we do recognize his synopsis as comprehensive and complete. It is especially useful in its inclusion of investigations carried on in eastern and southeastern Europe, that unfortunately are too often overlooked by the more western peoples, either through carelessness or unfamiliarity with the Slavic languages.

So much is included in CZAPEK'S summary that would hardly be expected even from the topics named, that it behooves every physiologist to read this paper and have it at hand for reference.—C. R. B.

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[3] CZAPEK, FRIEDRICH, Die Ernährungsphysiologie der Pflanzen seit 1896. Progressus Rei Botanicae (ed. J. P. LOTSY) 1:417–532. Leipzig: Gustav Fischer. 1907. Per volume, *M* 18.